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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/017,425 | 12/18/2001 | Kyung Sam Seo | HI-0067 | 6323 |
| 34610 | 7590 | 03/09/2005 | EXAMINER | |
| FLESHNER & KIM, LLP P.O. BOX 221200 CHANTILLY, VA 20153 | | | MUNOZ, GUILLERMO | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2637 | |

DATE MAILED: 03/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-------------------------------|----------------------------|--|
| Office Action Summary | Application No. 10/017,425 | Applicant(s) SEO ET AL. | |
| | Examiner Guillermo Munoz | Art Unit 2637 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 18-23 is/are rejected.
- 7) ☒ Claim(s) 8-17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

Claims 1-22 are objected to because of the following informalities:

Claim 1 is objected to because the acronym “DPCCH” in line 4 is not defined in the claim. It is suggested the acronym be written in long form. Additionally, the phrase “a reversed” in line 3 should be changed to —reversed—; the term “form” should be changed to —from—; the phrase “the other” in line 6 to —another—; line 6 the phrase “in a symbol basis” should be changed to —on a symbol-by-symbol basis—; the term “value” in line 7 should be changed to —values—; the phrase “values by a weight that has been multiplied by the pilot symbol section and another weight that has been multiplied by the other symbol section” in lines 9-10 should be changed to —value of the Q channel by a variable weight corresponding to the pilot symbol section and the I channel by another variable weight corresponding to the other symbol section—; the phrase “as many as a number of fingers in order of highest” in line 15 should be changed to —in a number of fingers in order of highest to lowest—; and the term “the comparison” in line 16 should be changed to —comparison—.

Regarding claim 3, the term “is” in line 2 should be changed to —are—.

Claims 2 and 4-7 are dependent upon objected to claim 1 and are thereby objected to.

Regarding claim 8, the phrase “sample at a designated rate” in line 4 should be rewritten as —sample rate—; the term “dispredding” in line 6 should be changed to —despredding—; the phrase “the other” in line 9 should be changed to —another—; the term “the coherent” should be changed to —a coherent—; and the phrase “in a form of a” in line 18 can be improved by

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rewriting the same as follows—in a sequence relative to the— or—in a sequence ordered from greatest to least—.

Regarding claim 9, see claim 2.

Claims 10-13 are dependent upon objected to claim 8 and are thereby objected to.

Regarding claim 14, the term “despread” in line 3 should be deleted; the term “dispreading” in line 5 should be changed to—despreading—; the phrase “to a scrambling code signals” in lines 5-6 should be changed to—using a scrambling code signal—; the phrase “to an orthogonal” in line 10 should be changed to—using an orthogonal—; and the phrase “as many as fingers” in lines 19-20 could be improved by rewriting the same as follows —, the number of values equal to a number of fingers—.

Regarding claim 15, the term “DPCCH” in line 2 should be changed to—DPCH—; and the phrase DPDCH of the DPDCH” in line 4 should be changed to—DPCCH of the DPCH—.

Claims 16-17 are dependent upon objected to claim 14 and are thereby objected to.

Regarding claim 18, the phrase “inputted in a form of a designated sample” in line 5 should be rewritten as—input at a predetermined sample rate—. Also, the acronyms “DPCCH” in line 10 and “DPDCH” in line 13, should be written in long form; the term “dispreading” in line 7 should be changed to—despreading—; the phrase “to a scrambling code signal” in line 8 should be changed to—using a scrambling code signal—; the phrase “to an orthogonal” in line 14 should be changed to—using an orthogonal—; and the phrase “as many as fingers” could be improved by rewriting the same as follows —, the number of values equal to a number of fingers—.

Regarding claim 21, the phrase "complement each other" in line 3 should be changed to —complements to each other—.

Claims 19-20 and 22 are dependent upon objected to claim 18 and are thereby objected to.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1-7 and 18-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1; the phrase "performing a coherent detection on a reversed I and Q channel signals of a DPCCH transmitted form a mobile station" in lines 3-4 and "other symbol section" in lines 10-11 render the claim indefinite. The DPCCH signal transmitted from the mobile station is generally know in the art to be the Q component of the I Q complex signal transmitted from a mobile station. Examiner is unable to determine from the specification the scope of the phrase "other symbol" based on the claimed I and Q channel signals of a DPCCH section.

Claim 7 is rejected as being indefinite because, line 6 the claim fails to clearly identify the steps involved in the determining the number of times to repeat the method and what steps in

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the method are repeated. It is suggested the claim be rewritten to more clearly indicate the claimed subject matter.

Claims 2-7 are dependent on rejected claim 1, and are rejected under 35 U.S.C. 112, second paragraph.

Claim 18 recites the limitation "each unit's control" in line 25. There is insufficient antecedent basis for this limitation in the claim.

Claims 19-22 are dependent on rejected claim 18, and are rejected under 35 U.S.C. 112, second paragraph.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Karlsson et al. (US Pub. No. 2002/0057730 A1) in view of Juntti et al. (US Pub. No. 2002/0110140 A1).

Karlsson et al. disclose a Spreading Factor Detection method, which teach almost all the claimed subject matter (the phrase "optionally selecting one" is interpreted to mean only one of the listed steps is claimed) of the step b1 in claim 23 as follows. Karlsson et al. disclose the frame structure of an upstream DPCCH and DPDCH signal having pilot bits utilized to generate a channel estimate and TFCI bits providing information about the spreading factor of the DPDCH component, note paragraph 0005. Karlsson et al. teach channel estimator outputting a

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complex conjugate estimated channel factor (i.e., real + imaginary weight) for reducing the effects of channel variation on the values output from despanders 1608 and 1612. Karlsson et al. do not explicitly state multiplying an energy value of the DPCCH and DPDCH with different weights, however, the function of multiplying the real component with a complex conjugate factor and the imaginary component with the complex conjugate factor is the same. Karlsson et al. fails to teach the different weights correspond to the spread factor.

Juntti et al. teach a method for detecting the spreading factor of a signal transmitted over a multipath environment wherein a spreading factor is determined prior to maximal ratio combining the use of spreading factor estimates for channel estimation, note paragraphs 0006 0042.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the channel estimation unit of Karlsson et al. with Juntti et al.'s teaching of using the spreading factor in generating channel estimations, since Juntti et al. suggest in paragraph 0006, that the results would improve SIR estimations.

Allowable Subject Matter

The following is a statement of reasons for the indication of allowable subject matter: Claims 8-13 are considered allowable because the present invention comprises an apparatus for searching a multipath communication comprising a coherent accumulator for coherently accumulating a multiplication of the despread output and a pilot signal on a basis of a pilot symbol section and another control symbol section. The closes art, Karlsson et al. (US Publication No. 2002/0057730 A1) teach a similar circuit including an apparatus for searching a

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multipath communication signal having a multiplier for multiplication of the despread output and pilot signal using a complex weight. However, Karlsson et al. fails to teach the multiplication of the despread output and a pilot signal based on a pilot symbol section and another control symbol section. This distinct feature has been included in independent claim 8 rendering it allowable.

Claims 9-13 are dependent on allowed claim 8, and are thereby indicated allowable.

Claims 14-17 are considered allowable because the present invention comprises a method for searching a multipath communication comprising a step of calculating an energy value of a Dedicated Physical Data Channel by multiplying the despread I and Q channel signals of a Dedicated Physical Channel by a pilot pattern, accumulating the multiplication outputs, calculating an energy value of the Dedicated Physical Control Channel, dechannelizing the despread signal using an orthogonal variable spreading factor, and accumulating the dechannelized code. The closest art, Karlsson et al. (US Publication No. 2002/0057730 A1) teach a similar circuit including an apparatus for searching a multipath communication signal having a Dedicated Physical Channel. However, Karlsson et al. fails to teach a step of calculating an energy value of a Dedicated Physical Data Channel by multiplying the despread I and Q channel signals of a Dedicated Physical Channel by a pilot pattern, accumulating the multiplication outputs, calculating an energy value of the Dedicated Physical Control Channel, dechannelizing the despread signal using an orthogonal variable spreading factor, and accumulating the dechannelized code. This distinct feature has been included in independent claim 14 rendering it allowable. Claims 15-17 are dependent on allowed claim 14, and are thereby indicated allowable.

Claim 1-7 and 18-22 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Guillermo Munoz whose telephone number is 571-272-3045. The examiner can normally be reached on Monday-Friday 8:30a.m-4:30p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



GM
February 21, 2005


JEAN B. CORRIELUS
PRIMARY EXAMINER

5/3/05